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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/689,622	10/22/2003	Yong Il Doh	8733.232.10-US	4808
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EXAMINER

MACARTHUR, SYLVIA

ART UNIT

PAPER NUMBER

1763

DATE MAILED: 03/17/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary	Application No. 10/689,622	Applicant(s) DOH, YONG IL	
	Examiner Sylvia R MacArthur	Art Unit 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/22/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1,7,9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Chough (US 3,767,491).

Regarding claim 1: Figure 1 teaches a container (etching bath), a holder (wafer boat), and an ultrasonic oscillator (ultrasonic generator).

Regarding claim 7: The holder supports a plurality of glass substrates. Though Chough does not specify that the substrates are made of glass. Nevertheless the apparatus of Chough is inherently capable of performing processing upon glass substrates.

Regarding claim 9: Col. 2 lines 65-69 teaches an ultrasonic tank that is an ultrasonic generator and Fig. 1 illustrates that the ultrasonic generator is located in the exterior of the bath.

Regarding claim 10: Fig.1 illustrates that the holder is located in the interior of the bath.

3. Claims 1 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Wessells et al (US 3,661,660).

Regarding claim 1: Wessells teaches an etching bath 10, a holder 60, and ultrasonic generators (transducers 14, 16, and 18).

Regarding claim 8: Fig. 1 illustrates that the transducers are located in the interior of the bath.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-4, 6, 11, 14 –17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chough in view of Schnegg et al (US 4,971,654).

The teachings of Chough were discussed above.

Regarding claims 2 and 14: Chough fails to teach that the etchant is HF.

Schnegg teaches an etching apparatus using hydrofluoric acid as the etchant.

The motivation to use HF is that is a strong acid that dissolves the oxidation product.

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide HF as the etchant in the apparatus of Chough.

Regarding claims 3, 4, 15, and 16: Chough fails to teach the holder is made of PTFE.

Col. 6 lines 48-52 of Schnegg teaches the processing boat is manufactured from PTFE.

Schnegg teaches that the PTFE is a suitable material for construction of the boat (holder) as it is inert to the etchant and the harsh etchant environment. Thus, it would have been obvious for one

of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Chough to manufacture the holder of PTFE as taught by Schnegg.

Regarding claims 6 and 11: Chough fails to teach a thermostat (temperature sensor).

Likewise Schnegg teaches a thermostat (temperature sensor) in col.4 lines 30-32. The motivation to provide a thermostat is that it ensures that the temperature (a critical processing parameter in etching) is controlled. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Chough to provide a thermostat for temperature control.

Regarding claim 17: The holder supports a plurality of glass substrates. Though Chough does not specify that the substrates are made of glass. Nevertheless the apparatus of Chough is inherently capable of performing processing upon glass substrates.

Regarding claim 19: Col. 2 lines 65-69 of Chough teaches a ultrasonic tank that is an ultrasonic generator and Fig. 1 illustrates that the ultrasonic generator is located in the exterior of the bath.

Regarding claim 20: Fig.1 of Chough illustrates that the holder is located in the interior of the bath.

6. Claims 11 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Wessells in view of Schnegg et al (US 4,971,654).

The teachings of Wessells were discussed above.

Regarding claim 11: Wessells fails to teach a thermostat (temperature sensor).

Likewise Schnegg teaches a thermostat (temperature sensor) in col.4 lines 30-32. The motivation to provide a thermostat is that it ensures that the temperature (a critical processing parameter in etching) is controlled. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to modify the apparatus of Wessells to provide a thermostat for temperature control.

Regarding claim 18: Wessells illustrates in Fig.1 that the transducers are located inside the bath.

7. Claims 5, 11-13, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Wessells or Chough in view of Kanda (US 4,338,157).

The teachings of Wessells and Chough were discussed above.

Regarding claim 5: Both fail to teach a thermometer.

A thermocouple is an art recognized equivalent of a thermometer.

Kanda teaches in col. 9 lines 57-60 that the temperature of the etching solution is measured by a thermocouple 52. The motivation to provide a thermocouple in the apparatus of Chough or Wessells is to provide a means of measuring the temperature during processing. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the apparatus of Chough and Wessells with a thermocouple.

Regarding claim 11: Both fail to teach a temperature sensor.

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Kanda teaches in col. 9 lines 57-60 that the temperature of the etching solution is measured by a thermocouple 52. The motivation to provide a thermocouple in the apparatus of Chough or Wessells is to provide a means of measuring the temperature during processing. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the apparatus of Chough and Wessells with a thermocouple.

Regarding claims 12 and 13: Both fail to teach a control unit.


Kanda teaches that processing unit 47 is provided. This processing unit (a computer) reads the data, stores the data, and computes the etching termination point as discussed in vol. 9 and 10. The motivation to provide the apparatus of Wessells or Chough with a process control device. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide a processing unit in the apparatus of Wessells or Chough.

Regarding claim 21: Both fail to teach a temperature indicator. The processing unit is provided with a indicator to display the temperature data. The motivation to provide the apparatus of Chough or Wessells with such an indicator is to provide the operator with a means to monitor the process. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the processing unit with an indicator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 8 a.m. and 2 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory L. Mills can be reached on 703-308-1633. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sylvia R MacArthur
Patent Examiner
Art Unit 1763

February 19, 2004